

CLAIMS

In the claims:

1. A method for identifying a region-of-interest in an ambient image, comprising:
establishing a template image;
performing a de-correlation heuristic on the ambient image and the template image to obtain an initial segmented image;
invoking a watershed heuristic on the initial segmented image; and
generating a revised segmented image after invoking the watershed heuristic.
2. The method of claim 1, wherein the revised segmented image is purposefully under-segmented.
3. The method of claim 1, wherein the revised segmented image is used by an airbag deployment application to make a deployment decision.
4. The method of claim 1, further comprising:
selecting the template image from a plurality of template images; and
comparing the selected template image and the ambient image.
5. The method of claim 4, wherein the plurality of template images relate to different light conditions.
6. The method of claim 1, wherein performing the de-correlation heuristic includes creating a plurality of maps for obtaining the initial segmented image.
7. The method of claim 6, wherein the plurality of maps includes at least two of a gradient map, a de-correlation map, and a threshold map.
8. The method of claim 1, wherein invoking the watershed heuristic includes preparing a marker.

9. The method of claim 1, wherein invoking the watershed heuristic includes preparing a contour.
10. The method of claim 1, wherein invoking the watershed heuristic includes updating a marker map.
11. The method of claim 1, further comprising performing a subsequent segmentation heuristic on the revised segmented image and generating a final segmented image.
12. A image segmentation system, comprising:
 - a de-correlation subsystem, said de-correlation subsystem providing for a gradient map, a de-correlation map, a threshold map, an input image, and an interim image;
 - wherein said de-correlation subsystem provides for the creation of said gradient map from said input image;
 - wherein said de-correlation subsystem is configured to generate a de-correlation map from said gradient map;
 - wherein said de-correlation subsystem is configured to calculate a threshold map from said de-correlation map;
 - wherein said de-correlation subsystem selectively identifies said interim image from said threshold map;
 - a watershed subsystem, said watershed subsystem providing for a marker, a contour, a marker map, and a region-of-interest image;
 - wherein said watershed subsystem provides for the creation of said marker and said contour from said interim image;
 - wherein said watershed subsystem is configured to update said marker map with said marker and said contour; and
 - wherein said watershed subsystem selectively identifies said region-of-interest image with said marker map.

13. The system of claim 12, wherein said region-of-interest image is used to generate an airbag deployment decision.
14. The system of claim 13, wherein the deployment decision is based on an occupant classification and an occupant motion characteristic.
15. The system of claim 12, further comprising a template subsystem, said template subsystem providing for a plurality of template images, wherein said template subsystem is adapted to selectively identify a template image from said plurality of template images; and
wherein said de-correlation subsystem is adapted to create said interim image with said template image.
16. The system of claim 15, wherein each template image in said plurality of template images relate to a lighting condition.
17. The system of claim 15, wherein each template image in said plurality of template images is an image without a target.
18. The system of claim 12, wherein said threshold map is calculated from a cumulative distribution function.
19. The system of claim 12, wherein a correlation coefficient is calculated to create said de-correlation map.
20. The system of claim 12, wherein said region-of-interest image is purposely under-segmented.
21. An automated vehicle safety restraint system, comprising:
a sensor, said sensor providing for the capture of an ambient image;
an airbag deployment mechanism, said airbag deployment mechanism configured for the receipt of a deployment decision; and

a computer, said computer providing for the receipt of said ambient image and the identification of a region-of-interest image from said ambient image, and wherein said computer is configured to create said deployment decision using said region-of-interest image.

22. The system of claim 21, wherein said sensor is a standard video camera.

23. The system of claim 21, wherein said computer is configured to identify a segmented image within said region-of-interest image, and wherein said computer is configured to create said deployment decision from said segmented image.

24. The system of claim 21, wherein said deployment decision is made from an occupant classification and an occupant motion characteristic.